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REMARKS

In the Final Office Action, the Examiner stated that claims 1-10 are pending in the application and that claims 1-10 stand rejected. None of the Applicant's claims are amended by this response.

In view of the following discussion, the Applicant respectfully submits that none of these claims now pending in the application are anticipated under the provisions of 35 U.S.C. § 102. Thus the Applicant believes that all of these claims are now in allowable form.

Rejections

A.   35 U.S.C. § 102

The Examiner rejected the Applicant's claims 1-10 under 35 U.S.C. § 102(b) as being anticipated by Boyce (U.S. Patent No. 5,726,711). The rejection is respectfully traversed.

The Examiner alleges that regarding claim 1, Boyce teaches a method of recording onto a storage a video segment including all of the elements of the Applicant's invention and specifically in col. 6, lines 33-49 and col. 7 lines 1-11. The Examiner further argues that the technical feature of "single video segment" is not in the Applicant's claim and as such the technical feature can not be used for the purposes of avoiding prior art. The Applicant respectfully disagrees.

The Applicant respectfully points out to the Examiner that the Applicant's independent claim 1 specifically recites:

> "A method of recording onto a storage medium a **video segment**, comprising the steps of:
> receiving **said video segment**, wherein said video segment contains at least one predictive picture containing intra macroblocks; and
> selectively converting said at least one predictive picture into an intra picture thereby replacing said at least one predictive picture with said intra picture in **said video segment**." (emphasis added).

It should be noted that in at least the Applicant's claim 1, the Applicant specifically recites and claims a method of recording onto a storage medium a (meaning one or single) video segment including receiving the one video segment which contains at least one predictive picture containing intra macroblocks and replacing the one

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predictive picture with a converted intra picture in the one video segment. As such, the Applicant respectfully disagrees with the Examiner that the technical feature of "single video segment" is not in the Applicant's claim and as such the technical feature can not be used for the purposes of avoiding prior art.

More specifically, the present invention teaches and claims the use of **a** (single) **video segment**. In that video segment, the one predictive picture is replaced with the intra picture.

In contrast to the invention of the Applicant, Boyce discloses the use of a **plurality** of video segments. The received progressive refreshed bit stream is not **selectively converted**, as claimed in the independent claims of the present application. Rather, data for generating the fully intra-coded frames are **extracted** in Boyce (see column 4, line 2, of Boyce). The fully intra-coded video frame is therefore not a modified video segment as in the present application. Rather, in Boyce it results from selection of some intra-macroblocks from the bit stream (see column 4, lines 34 to 38, of Boyce).

More specifically, on pages 1 to 3 of the Applicant's Specification, the related art is described. As pointed out on page 3, beginning at line 8, prior art solutions using a plurality of video frames (as in Boyce) can cause delays during a trick mode. That is, Boyce teaches fully intra-coded video frames for the trick modes using a plurality of video frames for the trick modes.

In contrast to Boyce, it is an object of the Applicant's invention to make use of a single video segment and to enhance the performance in trick modes using a single video segment. That is, in the invention of the Applicant, a **single** incoming video segment is received and at least one predictive picture in the video segment is selectively converted, thereby obtaining a modified video segment, i.e. a video segment in which the at least one predictive picture is replaced with the intra picture.

Boyce instead makes use of a plurality of video frames and there is absolutely no teaching, suggestion or disclosure in Boyce for using a single video segment only. As such, the Applicant submits that there is absolutely no teaching, suggestion or disclosure in Boyce for "selectively converting said at least one predictive picture into an intra picture thereby replacing said at least one predictive

picture with said intra picture in said video segment" as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1.

Furthermore, the Examiner alleges that col. 6, lines 33-49 and col. 7 lines 1-11 of Boyce anticipate all of the aspects of the Applicant's invention. The Applicant respectfully disagrees.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrik Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1983)). (emphasis added). The Applicant respectfully submits that Boyce fails to teach each and every element of at least the Applicant's independent claims and specifically claim 1.

The invention of the Applicant, and specifically claim 1, is directed at least in part to a method and system for modifying a video segment by converting non-intra pictures into intra-pictures. One embodiment of the Applicant's invention includes decoding at least one predictive picture in a received video segment and using the macroblock information of the decoded predictive picture to selectively re-encode at least one of the predictive pictures in the video segment into an intra picture. The re-encoded predictive picture is then replaced by the determined intra picture in the video segment.

In the Applicant's Specification, the Applicant teaches that a received video signal may be made up of video sequences containing a predetermined number of non-I pictures. The Applicant further teaches that in such a video signal, a portion of at least one P picture is typically encoded with I macroblocks. In accordance with an embodiment of the Applicant's invention, during normal playback, the pictures in the sequence can be constructed from the macroblocks, both I and non-I macroblocks, in the P pictures. That is, the Applicant teaches that, in accordance with the present invention, the I macroblock information and also the non-I macroblocks of a number of P pictures are implemented to properly decode a P picture and that subsequent pictures can be decoded using the properly decoded P-picture. The Applicant further teaches that a P-picture in the video signal can then be re-encoded into an I picture in the video signal using the information in the decoded P-pictures. Specifically, in claim 1, the Applicant specifically claims

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"selectively converting said at least one predictive picture into an intra picture thereby replacing said at least one predictive picture with said intra picture In said video segment." The Applicant respectfully submits that Boyce absolutely fails to teach, suggest or anticipate at least "selectively converting said at least one predictive picture into an Intra picture thereby replacing said at least one predictive picture with said intra picture in said video segment" as taught in the Applicant's Specification and claimed in at least the Applicant's claim 1.

That is, the Examiner cites Boyce for teaching all of the aspects of the Applicant's invention at least with respect to the Applicant's independent claim 1. The Applicant respectfully disagrees. The Applicant respectfully points out to the Examiner that Boyce teaches a method and apparatus for generating a fully intra-coded video frame from a received progressive refresh bitstream representing a series of inter-coded video frames. In the invention of Boyce, intra-coded macroblocks of received video frames are identified, selected, processed and stored to facilitate later combination into a single fully intra-coded composite video frame suitable for use during VTR trick play operation. (See Boyce, Abstract). That is, in contrast to the invention of the Applicant at least with respect to claim 1, Boyce specifically recites:

"Each fully intra-coded video frame output by the frame forming circuit 18 is supplied to the input of the video frame selection circuit 20. The video frame selection circuit 20 selects, as a function of the video frame Indicator signal output by the syntax parser, when the fully Intra-coded video frame generated by the frame forming circuit 18 is to be used during each of a plurality of different trick play speeds of operation, e.g., 3 times, 9 times and 27 times fast forward or reverse speeds of operation, and outputs these frames, e.g., via the corresponding outputs. For example, every time the video frame selection circuit determines that three video frames have been received by the syntax parser 12, e.g., by counting that the video frame indicator signal has been asserted three times since the last time a video frame was supplied to the 3 times speed output, the video frame selection circuit outputs the frame generated by the frame forming circuit 18. Similarly, the video frame selection circuit may output one frame to the 9 times output every nine times the video frame Indicator signal is asserted.
    In an alternative embodiment when the average time of a video frame is known, the video frame selection circuit uses the video frame indicator signal as a synchronization signal and supplies frames generated by the frame forming circuit 18 to the different speed outputs as a function of the amount of time that passes. (See Boyce, column 8, lines 13-37).

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That is, in Boyce a video frame selection circuit selects, as a function of a video frame indicator signal output by a syntax parser, when a fully intra-coded video frame generated by a frame forming circuit is to be used during each of a plurality of different trick play speeds of operation. In contrast, the invention of the Applicant teaches and claims "replacing said at least one predictive picture with said intra picture in said video segment". That is, in the Specification, the Applicant specifically recites:

> "At step 216, once the desired number of subsequent P pictures are decoded, one or more of the selectively decoded subsequent P pictures can be re-encoded into an I picture. In another arrangement, one or more of the introductory P pictures used for purposes of obtaining the properly decoded P picture can also be re-encoded into an I picture. In either arrangement, the I picture can replace the original P picture in the video signal." (See Applicant's Specification, page 11, line 20 through page 12, line 2).

That is, in the invention of the Applicant at least with respect to claim 1, a predictive picture is replaced in the video segment with a respectively converted intra picture. In contrast to the invention of the Applicant at least with respect to claim 1, in Boyce a predictive picture is not replaced in the video signal with an intra picture. Instead, in Boyce a video frame selection circuit provides intra-coded video frames generated by the frame forming circuit 18 to be used during each of a plurality of different trick play speeds of operation. In fact, Boyce further specifically teaches:

> "The fully intra-coded digital video frames output via the various speed outputs of the video frame selection circuit can be supplied to one or more buffers prior to recording on a tape in specific tape locations which are arranged to be read during VTR trick play operation when the VTR operates at the specific speeds and directions of trick play for which the data frames are selected." (See Reference 1, col. 8, lines 50-56).

That is, Boyce teaches that fully intra-coded digital video frames output via the various speed outputs of the video frame selection circuit are each separately recorded on a tape in specific and different tape locations which are arranged to be read during VTR trick play operation when the VTR operates at the specific speeds

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and directions of trick play for which the data frames are selected. This is in direct contrast to the invention of the Applicant, at least with respect to independent claim 1, which specifically teaches and claims "replacing said at least one predictive picture with said intra picture in said video segment".

In further detail, Boyce teaches a method and apparatus for generating a fully intra-coded video frame from a received progressive refreshed bit stream representing a series of inter-coded video frames. Intra-coded macroblocks of received video frames are identified, selected, processed and stored to facilitate later combination into a single fully intra-composite video frame suitable for use during VTR trick play operation (see Boyce, abstract). Column 8, lines 13 to 37 of Boyce, discloses: "Each fully intra-coded video frame output by the frame forming circuit 18 is supplied to the input of the video frame selection circuit 20. The video frame selection circuit 20 selects, ... when the fully intra-coded video frame generated by the frame forming circuit 18 is to be used ... ".

As such and for at least the reasons recited above, the Applicant respectfully submits that Boyce fails to teach, suggest or disclose each and every element of the Applicant's claimed invention, arranged as in the at least the Applicant's independent claims and specifically claim 1.

Therefore, the Applicant submits that for at least the reasons recited above, independent claim 1 is not anticipated by the teachings of Boyce and, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

Likewise, independent claim 6 recites similar relevant features as recited in the Applicant's independent claim 1. As such, the Applicant submits that for at least the reasons recited above, independent claim 13 is also not anticipated by the teachings of Boyce and also fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

Furthermore, dependent claims 2-5 and 7-10 depend either directly or indirectly from independent claims 1 and 6, respectively, and recite additional features therefor. As such and for at least the reasons set forth herein, the Applicant submits that dependent claims 2-5 and 7-10 are also not anticipated by the teachings of Boyce. Therefore the Applicant submits that dependent claims 2-

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5 and 7-10 also fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

Conclusion

Thus the Applicant submits that none of the claims, presently in the application, are anticipated under the provisions of 35 U.S.C. § 102(b). Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.
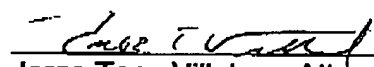
If however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion, it is respectfully requested that the Examiner telephone the undersigned.

No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account No. 07-0832.

Respectfully submitted,

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By: _____

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